

SERVICE EXECUTION METHOD AND COMPUTER SYSTEM

TECHNICAL FIELD

[0001] This specification relates to the field of computer technologies, and in particular, to a service execution method and a computer system.

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BACKGROUND

[0002] With popularization of the mobile Internet and development of technologies, electronic wallets are widely used. The electronic wallet is a digital payment tool that can manage user payment information and allows a user to quickly complete an electronic transaction without a need for cash or a bank card.

10 [0003] At present, in addition to providing a payment service, the electronic wallet can be further integrated with third-party services such as ordering, ride-hailing, and ticket purchase. To attract more users to use the electronic wallet and provide, to a merchant that provides the third-party service, a channel that accurately reaches the user, marketing information can be displayed to the user on a specific page of the electronic wallet. The user can obtain digital assets such as
15 coupons or virtual currencies by interacting with the displayed marketing information. Then, the user can execute the electronic transaction by using the electronic wallet, to consume the obtained digital assets. This not only improves a possibility and a quantity of electronic transactions performed by the user by using the electronic wallet, but also increases a potential user for the merchant.

20 [0004] Usually, the marketing information is displayed on the specific page of the electronic wallet in a form of a banner advertisement. Because a proportion of the banner advertisement on the page is limited, another page is usually displayed through a jump after the user taps the banner advertisement, to display the marketing information in more detail. The user can obtain the corresponding digital assets only after tapping the page displayed through a jump.

25 [0005] In the above-mentioned solution, the user can obtain the digital assets only by performing at least steps of tap-jump-tap again in the electronic wallet. An interaction path is

relatively long. Once a page jump fails or the user does not perform a tap operation again after a jump, the user cannot obtain the digital assets. This greatly raises a threshold of obtaining the digital assets by the user, and reduces efficiency and a possibility of performing the electronic transaction by the user by using the electronic wallet.

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SUMMARY

[0006] This specification provides a service execution method and a computer system, to partially resolve the above-mentioned problems in the conventional technology.

[0007] This specification provides a service execution method. The method is applied to an electronic wallet, and a target program is pre-deployed in the electronic wallet; and the method
10 includes: determining marketing information by using the target program in response to a display request for a specified page; displaying the specified page, and displaying the marketing information in a marketing booth included on the specified page; and allocating digital assets corresponding to the marketing information to an account of a user in the electronic wallet in response to an operation performed by the user on the marketing information.

[0008] This specification provides a computer system, including a storage, a processor, and a computer program that is stored in the storage and that is capable of running on the processor. When executing the program, the processor implements the following steps: determining, in response to a display request for a specified page, marketing information by using a target program pre-deployed in an electronic wallet; displaying the specified page, and displaying the marketing
20 information in a marketing booth included on the specified page; and allocating digital assets corresponding to the marketing information to an account of a user in the electronic wallet in response to an operation performed by the user on the marketing information.

[0009] This specification provides a computer-readable non-volatile storage medium. The storage medium stores a computer program, and when the computer program is executed by a
25 processor, the service execution method is implemented.

[0010] The above-mentioned at least one technical solution used in this specification can achieve the following beneficial effects:

[0011] In the service execution method provided in this specification, a target program is pre-deployed in an electronic wallet. The electronic wallet determines marketing information by using

the target program in response to a display request for a specified page; displays the specified page, and displays the marketing information in a marketing booth included on the specified page; and allocates digital assets corresponding to the marketing information to an account of a user in the electronic wallet in response to an operation performed by the user on the marketing information.

5 According to the above-mentioned solution, the user can obtain the digital assets by performing one operation on the specified page of the electronic wallet, without a need to jump to another page or application. In this way, a digital asset obtaining threshold is lowered, and efficiency of performing an electronic transaction by the user by using the electronic wallet is improved. In addition, the target program is deployed in the electronic wallet, and the target program manages

10 content and display of the marketing information, to reduce costs of developing marketing content by the electronic wallet, and improve display efficiency of the marketing content.

BRIEF DESCRIPTION OF DRAWINGS

[0012] The accompanying drawings described herein are used to provide a further understanding of this specification and constitute a part of this specification. The example

15 embodiments of this specification and descriptions thereof are used to explain this specification, and do not constitute an improper limitation on this specification. In the accompanying drawings:

[0013] FIG. 1 is a schematic diagram of an electronic wallet page for displaying marketing information according to this specification;

[0014] FIG. 2 is a schematic flowchart of a service execution method according to this

20 specification;

[0015] FIG. 3 is a schematic diagram of a specified page for displaying marketing information according to this specification;

[0016] FIG. 4 is a schematic diagram of a specified page for displaying marketing information according to this specification;

25 [0017] FIG. 5 is a schematic diagram of an interaction procedure of a service execution method according to this specification;

[0018] FIG. 6 is a schematic flowchart of a service execution method according to this specification;

[0019] FIG. 7 is a schematic diagram of an interaction procedure of a service execution method

according to this specification;

[0020] FIG. 8 is a schematic flowchart of a service execution method according to this specification; and

[0021] FIG. 9 is a schematic diagram of a computer system corresponding to FIG. 2 according to this specification.

DESCRIPTION OF EMBODIMENTS

[0022] To make the objectives, technical solutions, and advantages of this specification clearer, the following clearly and comprehensively describes the technical solutions of this specification with reference to specific embodiments and corresponding accompanying drawings of this specification. Clearly, the described embodiments are merely some but not all of embodiments of this specification. All other embodiments obtained by a person of ordinary skill in the art based on the embodiment of this specification without creative efforts shall fall within the protection scope of this specification.

[0023] In addition, it should be noted that all actions of obtaining a signal, information, or data in this specification are performed in compliance with a corresponding data protection regulations and policies of a local place and are authorized by an owner of a corresponding apparatus.

[0024] It should be noted that features in the following embodiments and the implementations can be mutually combined when there is no conflict.

[0025] As described above, at present, an electronic wallet is not limited to providing a payment service to a user, but is also integrated with a plurality of types of third-party services. The user can use the electronic wallet to perform an electronic transaction related to the third-party service, for example, ordering, ride-hailing, and ticket purchase.

[0026] In a complete user link, interaction processes of entering the electronic wallet, browsing a page displayed by the electronic wallet, performing an electronic transaction, and jumping to a transaction success page by the electronic wallet are successively executed. However, in actual applications, a large amount of idle traffic still exists in the user link, and the idle traffic can be user access that is not fully used or a user behavior that is not effectively converted into an expected electronic transaction behavior.

[0027] For example, when the user starts the electronic wallet to execute the electronic

transaction (for example, payment by code or displaying of a payment code), the user first accesses a home page of the electronic wallet by default. If the home page of the electronic wallet does not provide an entry control for entering the third-party service, it is difficult for the user to directly use, by using the home page of the electronic wallet, a service provided by a third-party merchant.

5 Consequently, some users access the home page of the electronic wallet; or after using the payment code or a code scanning function, the user views only a small quantity of pages, and leaves soon, without performing in-depth interaction or completing any target conversion. For another example, the electronic wallet jumps to the transaction success page after the user performs the electronic transaction. Usually, the transaction success page displays only prompt information of a

10 transaction success, or includes a page jump control for jumping to the home page or another page. Therefore, a blank page with a large area exists on the transaction success page. Although the electronic wallet attracts the user to the transaction success page after the user performs the electronic transaction, because of the blank page with a large area on the transaction success page, the user does not have any further conversion action.

15 **[0028]** In the above-mentioned case, marketing information can be placed on a specific page of the electronic wallet (for example, the home page or the transaction success page of the electronic wallet). The user interacts with the marketing information, to effectively transfer and convert traffic, thereby increasing a quantity and a possibility of electronic transactions. However, a proportion of the marketing information on the specific page of the electronic wallet is usually

20 not high, for example, marketing information placed in a form of a banner advertisement. A left diagram in FIG. 1 shows a service page of a ride-hailing function integrated into the electronic wallet. The ride-hailing page displays content and information required for providing a ride-hailing service to the user, for example, a title of "XX ride-hailing", a map of a specific range of a current location of the user, a start and an end of ride-hailing of the user, and a related service provided by

25 the ride-hailing service, for example, reservation, designated ride-hailing, and designated driver. In addition, the ride-hailing page can further display marketing information, for example, marketing information placed in a form of a banner advertisement in a lower part of the ride-hailing page shown in the left diagram in FIG. 1, including a marketing pitch "Ride-hailing card·Discount on every ride-hailing", which is used to prompt and guide a discount marketing

30 activity that is of the ride-hailing service and that corresponds to the marketing information. It can be learned that, on the ride-hailing page shown in the left diagram in FIG. 1, a proportion of

original content and information on the ride-hailing page is usually relatively large, so that a proportion of the marketing information is relatively small.

[0029] In this case, the marketing information placed on the specific page is usually bound to another marketing page. When the user interacts with the marketing information (for example, taps the marketing information), the electronic wallet jumps to the marketing page bound with the marketing information. Detailed information of a marketing activity corresponding to the marketing information or a merchant that provides the third-party service is displayed on the marketing page. After the user interacts with a control or information displayed on the marketing page, corresponding digital assets can be obtained. For example, the user taps a control for participating the marketing activity on the marketing page, to obtain digital assets that can be used in the electronic wallet, or the user selects a service entry of a merchant, to obtain digital assets dedicated to a corresponding service. The left diagram in FIG. 1 is still used as an example. The marketing information in the lower part of the ride-hailing page includes a page jump control marked with a text "Go to see". In response to that the user taps the page jump control, the electronic wallet jumps to display a marketing page shown in a right diagram in FIG. 1. The marketing page includes detailed information of the discount marketing activity of the ride-hailing service, including a specific discount amount, a condition required for enjoying a discount, an applicable ride-hailing scenario, etc., to interpret the marketing activity for the user in detail.

[0030] After obtaining the digital assets, the user can consume corresponding digital assets, to complete the electronic transaction at relatively low transaction execution costs (for example, a relatively low payment amount). Based on such an interaction procedure, the user can reduce a consumption amount of the transaction execution costs in a subsequent electronic transaction, and the merchant that provides the third-party service can obtain more user access and user transactions. For the electronic wallet, efficiency and a possibility of performing the electronic transaction by the user by using the electronic wallet are improved.

[0031] In the above-mentioned interaction procedure, the user needs to tap the marketing information displayed on the specific page of the electronic wallet, and then, the electronic wallet jumps to display the marketing page. The user needs to tap again the control or information displayed on the marketing page, which is equivalent to that the user can obtain the digital assets only by performing at least steps of tap-jump-tap again. Such a relatively complex interaction path may enable the user to give up in a process of participating in the marketing activity. For example,

the user may find, after tapping the marketing information, that the user can participate in the marketing activity only by performing a further operation on the marketing page, and therefore, decide not to continue. Alternatively, the marketing page unsuccessfully jumps and cannot be displayed normally. After the user exits, willingness to tap the marketing information again decreases greatly. Consequently, a conversion rate of a user transaction behavior is reduced.

[0032] To resolve the above-mentioned problem, this specification provides a service execution method. In a solution of participating an activity in a timely manner, steps from marketing information to actual participation in the activity are reduced, and a case in which another page needs to be jumped or interaction is required for a plurality of times is avoided, to shorten an interaction path, thereby improving user participation and a conversion rate, and further improving a quantity and efficiency of electronic transactions performed by the user by using an electronic wallet.

[0033] The following describes in detail the technical solutions provided in the embodiments of this specification with reference to the accompanying drawings.

[0034] FIG. 2 is a schematic flowchart of a service execution method according to this specification.

[0035] S100: Determine marketing information by using a target program in response to a display request for a specified page.

[0036] This embodiment of this specification provides a service execution method. An execution process of the method can be performed by an electronic device installed with an electronic wallet. The electronic device can be a mobile/non-mobile terminal device such as a smartphone, a tablet computer, a laptop computer, or a desktop computer. This is not limited in this specification.

[0037] In this specification, in a process in which a user interacts with the electronic wallet, the electronic wallet displays several display interfaces. One or more pages can be selected from the several display interfaces as a specified page, and marketing information is placed on the specified page, to attract and prompt the user accessing the specified page to interact with the marketing information, thereby participating in a marketing activity and obtaining corresponding digital assets. The specified page can be any display page in an interaction link between the user and the electronic wallet, for example, a home page, a function and service details page, a settlement page, and a transaction success page. A specific type of the specified page is not limited

in this specification.

[0038] Usually, the user selects, as a common electronic wallet, a local electronic wallet in a place in which the user is located, to execute an electronic transaction. However, the local electronic wallet can only provide a local payment service or a third-party service to the user based on a local currency type and a local regulatory compliance policy. If the user has a cross-border payment service requirement, a wide cross-border cooperation network needs to be used, and various local electronic wallets are connected through the cross-border cooperation network, so that the user can easily use a familiar electronic wallet overseas, to improve convenience and security of cross-border payment.

[0039] With reference to a scenario of the cross-border payment, to improve efficiency of placing the marketing information and reduce costs of developing and managing the marketing information, the target program can be pre-deployed in the electronic wallet. The target program can be developed by a creator of the cross-border cooperation network, and is integrated with program code that is deployed in the electronic wallet and that provides support for a cross-border payment for the electronic wallet. The target program can be deployed by using solutions of being integrated with a software development kit (SDK), a microservice architecture, a dynamic link library, a remote service invocation, a plug-in architecture, etc. This is not limited in this specification. In addition, the target program manages determining and displaying of the marketing information, and can also manage allocation and distribution of digital assets corresponding to a marketing activity corresponding to the marketing information.

[0040] Therefore, when display of the marketing information is managed based on the target program, the pre-deployed target program can be invoked when the specified page is displayed. The target program determines marketing information to be displayed on the specified page, and determines a display location of the to-be-displayed marketing information on the specified page, and the target program performs rendering of the marketing information at the corresponding display location, so that the marketing information is displayed at the determined display location when a page is displayed.

[0041] A display form of the marketing information can be a banner, a pop-up window, an interactive type, a native type, etc. Content displayed in the marketing information can be presented in one or more of a text, a static/dynamic image, and a video. The content displayed in the marketing information can be specifically determined based on a corresponding marketing

activity. Specific activity content of the marketing activity is not limited in this specification. The marketing activity can be an existing activity that is of any type and that can attract the user to increase a use frequency of the electronic wallet, for example, a payment discount, a cashback activity, a points reward, red packet sharing, distribution of a coupon corresponding to a product or service or a merchant that provides a product and service, signing in, inviting new users to register, or a theme activity for a specific event or holiday.

5 [0042] For example, if the marketing activity is a payment discount activity, the content displayed in the marketing information can be activity content related to a payment discount, for example, signing in to obtain points for deducting a payment (referring to a schematic diagram of a specified page shown in a left diagram in FIG. 3) or flipping a card to obtain a coupon for discounting (referring to a schematic diagram of a specified page shown in a right diagram in FIG. 3). Alternatively, if the marketing activity is a marketing activity of a product or service, the content displayed in the marketing information can be activity content related to the product or service, for example, tapping to receive an allowance for a product or service. When purchasing the product or service, the user can use the received allowance to deduct a partial amount.

15 [0043] In this specification, the electronic wallet can invoke the target program in response to the display request for the specified page, and the target program determines, based on information such as a date and a time period of the display request for the specified page, a feature of the user, and a type and a version of a client of the electronic wallet and a pre-optimized recommendation algorithm, the marketing information to be displayed on the specified page. For example, if the date and the time period of the display request for the specified page are a lunch time period of a working day, the target program can determine, based on the date and the time period of the display request and the pre-optimized recommendation algorithm, that discount information of a merchant that provides an ordering service is marketing information to be displayed on the specified page, to improve a possibility of performing an ordering transaction by the user.

25 [0044] Certainly, preset marketing information pre-configured in the electronic wallet can also be managed by the target program, and is used as the marketing information to be displayed on the specified page. For example, if the date of the display request for the specified page is in a holding period of a tournament, the electronic wallet can pre-configure discount information of a ticket service of the tournament as the preset marketing information, and hand the discount information over to the target program for management. When the electronic wallet responds to the display

request for the specified page, the target program can be invoked, to use the discount information of the ticket service of the tournament as the marketing information to be displayed on the specified page.

5 [0045] In addition, in addition to the marketing information, other content and information are displayed on the specified page. Therefore, a marketing booth used to display the marketing information can be pre-reserved on the specified page that displays the marketing information. Attribute information of the marketing booth can include a booth shape, a size, a display location of the marketing booth on the specified page, etc. The target program can determine marketing information that matches the attribute information of the marketing booth, to optimize a display
10 effect of the marketing information on the specified page.

[0046] In this specification, the display request for the specified page can be generated when the user interacts with the electronic wallet to trigger display of the specified page. For example, when the specified page is a home page of the electronic wallet, and the user starts the electronic wallet, the electronic wallet is triggered to display the home page. In this case, a display request
15 for the home page is generated. The electronic wallet responds to the display request for the home page, and the target program is invoked to determine marketing information to be displayed on the home page. For another example, the specified page is a transaction success page. After the user performs settlement on a settlement page and jumps to the payment page for payment, if payment succeeds, the electronic wallet is triggered to display the payment success page. Therefore, after
20 payment succeeds, the electronic wallet generates a display request for the payment success page. In response to the display request, the target program is invoked to determine marketing information to be displayed on the payment success page.

[0047] S102: Display the specified page, and display the marketing information in the marketing booth included on the specified page.

25 [0048] After the target program is invoked to determine the marketing information, the marketing booth on the specified page can be rendered based on determined marketing content, to display the marketing information in the marketing booth. For the electronic wallet, the target program is invoked to determine the marketing information, and the marketing information is rendered and displayed on the specified page. When the user accesses the specified page of the
30 electronic wallet in a high concurrency manner, pressure of processing and rendering the marketing information can be relieved, and display efficiency of the specified page can be improved, thereby

attracting the user to interact with the marketing information to participate in the marketing activity, improving a use frequency of the electronic wallet, and bringing more potential users to the merchant.

[0049] A left diagram in FIG. 4 shows a specified page that displays marketing information, which is specifically a ride-hailing page that provides a ride-hailing service. The ride-hailing page includes information related to the ride-hailing service. In addition, a marketing booth in which the marketing information is located is actually located at a location between a booth used to display a start and an end on the ride-hailing page and a booth used to display another function.

[0050] S104: Allocate digital assets corresponding to the marketing information to an account of the user in the electronic wallet in response to an operation performed by the user on the marketing information.

[0051] In this specification, the marketing information to be displayed on the specified page corresponds to various forms, and different forms of marketing information can correspond to different operations of the user on the marketing information. Therefore, the operation of the user on the marketing information can include but is not limited to interactive operations such as tapping, sharing, typing a character, smearing, sliding, and a specific gesture. For example, if the marketing information is tapping to receive a payment voucher, the marketing information to be displayed in the marketing booth included on the specified page can include a control marked with a text "receive", and the user taps the control to directly obtain the payment voucher. That is, for the user, the payment voucher is directly delivered to the account of the user in the electronic wallet. Alternatively, if the marketing information is a sliding puzzle, and a full coupon of a merchant is received after splicing is completed, the marketing information to be displayed in the marketing booth included on the specified page can include a slidable puzzle and a to-be-spliced image that includes slots. The user slides a screen to control the slidable puzzle to be aligned with the slot in the to-be-spliced image, and can directly obtain the full coupon of the merchant after completing splicing. That is, for the user, the full coupon of the merchant is directly delivered to the account of the user in the electronic wallet.

[0052] In response to the operation of the user on the marketing information, that is, in response to that the user participates in the marketing activity corresponding to the marketing information, the electronic wallet can invoke the target program to allocate, based on a predetermined digital asset allocation rule, digital assets corresponding to the marketing activity

to an account that is opened by the user in advance in the electronic wallet.

[0053] The digital assets corresponding to the marketing information can be points, a token, a digital currency, an encrypted currency, a virtual product (for example, a quantity of trial times of a product or a service), various types of electronic coupons related to a payment, etc. This specification sets no limitation on a type of the digital assets and an actual allocation amount of the digital assets allocated to the account.

[0054] In addition, the digital assets allocated to the account of the user in the electronic wallet can be permanently stored in the account of the user, and are not lost or become invalid due to behaviors such as uninstallation, reinstallation, and account switching of the electronic wallet on the electronic device used by the user. However, a validity period can be set for the digital assets allocated to the account of the user in the electronic wallet based on an actual application scenario. For example, a corresponding state identifier is configured for the digital assets allocated to the account of the user in the electronic wallet. The state identifier can represent a valid state or an invalid state of the digital assets. For example, when storage duration of storing the digital assets allocated to the account of the user exceeds preset valid duration, the state identifier changes from the valid state to the invalid state.

[0055] In this specification, when data is transmitted between a marketing server and the electronic wallet, transmitted information or data can be encrypted, to ensure that only the marketing server and the electronic wallet can read content of the encrypted information or data, or a specific transmission protocol (for example, an HTTPS protocol) is used to protect security of the data or information in a transmission process, to prevent the data from being eavesdropped or tampered with. Certainly, an existing solution of another type can alternatively be used to improve security of data transmission between the marketing server and the electronic wallet.

[0056] Based on the service execution method provided in this specification, for the operation performed by the user on the marketing information in the electronic wallet, there can be no need to jump to another page in the electronic wallet or pull a third-party application. Instead, the marketing activity corresponding to the marketing information is directly participated in by performing one operation. The service execution method provided in this specification greatly shortens an interaction path between the user and the electronic wallet, thereby reducing a conflict of the user to the marketing information and the marketing activity, increasing a daily activity of the electronic wallet, improving a degree of activity of an existing user, and increasing a use

frequency of the electronic wallet.

[0057] After the digital assets corresponding to the marketing information are allocated to the account of the user in the electronic wallet, optionally, a digital asset allocation success message can be displayed in the marketing information displayed on the specified page, to prompt the user to perform a transaction to consume the allocated digital assets. For example, as shown in the left diagram in FIG. 4, after the user taps a control including a text "Tap to receive", the digital assets corresponding to the marketing information, which are a ride-hailing coupon herein, are delivered to the account of the user in the electronic wallet. Then, the text "Tap to receive" displayed in the marketing information displayed on the ride-hailing page can change to a text "Successfully received", as shown in a right diagram in FIG. 4, to prompt the user that the digital assets corresponding to the marketing information are allocated to the account of the user. In addition, when a specified page shown in the left diagram in FIG. 4 changes to a specified page shown in the right diagram in FIG. 4, a page jump does not essentially occur, and only a prompt text change occurs on the specified page, to avoid a problem that due to a page jump failure, no digital assets are allocated and the user cannot participate in the marketing activity.

[0058] In the service execution method provided in this specification, a target program is pre-deployed in an electronic wallet. The electronic wallet determines marketing information by using the target program in response to a display request for a specified page; displays the specified page, and displays the marketing information in a marketing booth included on the specified page; and allocates digital assets corresponding to the marketing information to an account of a user in the electronic wallet in response to an operation performed by the user on the marketing information. According to the above-mentioned solution, the user can obtain the digital assets by performing one operation on the specified page of the electronic wallet, without a need to jump to another page or application. In this way, a digital asset obtaining threshold is lowered, and efficiency of performing an electronic transaction by the user by using the electronic wallet is improved. In addition, the target program is deployed in the electronic wallet, and the target program manages content and display of the marketing information, to reduce costs of developing marketing content by the electronic wallet, and improve display efficiency of the marketing content.

[0059] In one or more embodiments of this specification, in step S104 shown in FIG. 2, allocating the digital assets to the account of the user in the electronic wallet can be managed by the marketing server corresponding to the target program. As shown in FIG. 5, a specific

interaction procedure is as follows:

[0060] S200: The electronic wallet generates an activity participation request for a marketing activity including the marketing information by using the target program and based on the marketing information and a user identifier of the user in response to the operation performed by the user on the marketing information.

[0061] Specifically, when displaying the specified page or responding to the operation performed by the user on the marketing information, the electronic wallet invokes the target program to obtain the user identifier of the user. The user identifier can be information or a string used to uniquely identify the user, and can be a user name used to log in to the electronic wallet, a unique user number allocated by the electronic wallet to the user, a mobile phone number of the user, an account code authenticated by a third party (for example, another social media), etc.

[0062] The target program generates the activity participation request based on the marketing information and the user identifier, to indicate the user corresponding to the user identifier to participate in the marketing activity corresponding to the marketing information. The activity participation request is sent to the marketing server, and the marketing server can parse the activity participation request, to obtain the user identifier and the marketing information. Therefore, the user who participates in the activity is determined based on the user identifier, and a specific marketing activity in which the user participates is determined based on the marketing information.

[0063] S202: Send the activity participation request to the marketing server.

[0064] In this specification, the marketing server can be a server used to manage the marketing information, the marketing activity, and corresponding digital asset allocation. The marketing server can be an independent physical server, a server cluster or a distributed system including a plurality of physical servers, or can be a cloud server that provides a cloud computing service. The marketing server and the electronic device configured with the electronic wallet can interact through a network to receive or send a message. The network can be communication mediums of various connection types that can provide a communication link between the electronic device and the marketing server, for example, can be a wired communication link or a wireless communication link. The wireless communication link includes but is not limited to Bluetooth, Wi-Fi, near field communication, or a cellular mobile communication network. This is not limited in this specification.

[0065] S204: The marketing server determines a digital asset allocation amount corresponding

to the marketing activity including the marketing information in response to the activity participation request, and generates an allocation instruction based on the digital asset allocation amount corresponding to the marketing activity including the marketing information and the user identifier.

5 **[0066]** Specifically, if the marketing information is determined by the marketing server in step S100, the marketing server can determine the marketing activity corresponding to the marketing information when determining the marketing information, determine the digital asset allocation amount corresponding to the marketing activity, bind the determined marketing activity and the digital asset allocation amount to the marketing information, establish a correspondence among
10 the determined marketing activity, the digital asset allocation amount, and the marketing information, and store the correspondence in the marketing server. In this case, in response to the activity participation request, the marketing server can search for the marketing activity corresponding to the marketing information by using, as an index, the marketing information obtained through parsing from the activity participation request, to find the digital asset allocation
15 amount corresponding to the marketing activity.

[0067] If in step S100, the marketing information is not determined by the marketing server, but is determined by the electronic wallet on the electronic wallet side by invoking the target program or is determined based on preset marketing information pre-configured for the electronic wallet, before the user interacts with the marketing information displayed on the specified page,
20 the electronic wallet can send the marketing information, the marketing activity corresponding to the marketing information, and the digital asset allocation amount corresponding to the marketing activity to the marketing server by invoking the target program. The marketing server stores the received marketing information, the received marketing activity corresponding to the marketing information, and the received digital asset allocation amount corresponding to the marketing
25 activity, and establishes a correspondence among the received marketing information, the received marketing activity corresponding to the marketing information, and the received digital asset allocation amount corresponding to the marketing activity. Therefore, the marketing server can determine the digital asset allocation amount corresponding to the activity participation request in response to the activity participation request.

30 **[0068]** In addition, in an optional embodiment of this specification, to further attract the user to interact with the marketing information, and improve a probability and stickiness of using the

electronic wallet by the user, a digital asset allocation rule can be pre-configured for the marketing activity corresponding to the marketing information. The digital asset allocation rule can include a correspondence between a quantity of interaction times of the marketing information corresponding to the marketing activity and the digital asset allocation amount allocated to the account of the user in the electronic wallet. The digital asset allocation rule is stored in the marketing server, and the marketing server can find the digital asset allocation rule corresponding to the marketing activity based on the marketing information, to determine the digital asset allocation amount based on the digital asset allocation rule.

[0069] The quantity of interaction times is directly proportional to the digital asset allocation amount. To be specific, a larger quantity of interaction times indicates a larger digital asset allocation amount. For example, the marketing information is signing in to receive points, and the digital asset allocation rule corresponding to the marketing activity is that available points linearly increase as a quantity of signing in days increases. For example, one point is received on the first day of signing in, two points are received on the second day of signing in, and three points are received on the third day of signing in, as shown in a left diagram in FIG. 3. Certainly, the quantity of interaction times can alternatively have another relationship with the digital asset allocation amount. Signing in is still used as an example. The digital asset allocation rule corresponding to the marketing activity is that available points non-linearly increase as a quantity of signing in days increases. For example, two points are received on the first day of signing in, one point is received on the second day of signing in, and four points are received on the third day of signing in. An actual digital asset allocation rule and a user interaction behavior that triggers the rule can be determined based on a specific application scenario. This is not limited in this specification.

[0070] S206: Return the allocation instruction to the electronic wallet.

[0071] S208: The electronic wallet allocates digital assets corresponding to the digital asset allocation amount to the account of the user corresponding to the user identifier in the electronic wallet in response to the allocation instruction returned by the marketing server.

[0072] Based on the implementation shown in FIG. 5, the marketing server determines the digital asset allocation amount corresponding to the marketing activity of the marketing information, and the marketing server generates the allocation instruction based on the digital asset allocation amount. The electronic wallet only needs to respond to the allocation instruction, and does not need to determine and manage the digital asset allocation amount corresponding to the

marketing activity. In a high concurrency scenario, pressure of managing digital asset allocation by the electronic wallet is relieved, and efficiency of managing the marketing activity and allocating the digital assets is improved.

[0073] In one or more embodiments of this specification, in step S100 shown in FIG. 2, the target program can determine the marketing information based on the marketing booth used to display the marketing information on the specified page, to optimize the display effect of the marketing information on the specified page. Specifically, a booth identifier can be allocated to a marketing booth used to display the marketing information, and attribute information of the marketing booth is determined based on the booth identifier. Determining of the marketing information is restricted by the attribute information of the marketing booth, to optimize the display effect of displaying the marketing information on the specified page, and attract the user to tap the marketing information. For a specific implementation, refer to FIG. 6. Steps are as follows.

[0074] S300: Determine the booth identifier corresponding to the marketing booth included on the specified page in response to the display request for the specified page.

[0075] Specifically, to improve efficiency of displaying the marketing information on the specified page, and optimize the display effect of the marketing information on the specified page, usually, one or more specified pages used to display the marketing information are pre-determined from a plurality of display pages displayed by the electronic wallet, and then the marketing booth used to display the marketing information is reserved on each determined specified page. To improve efficiency of managing the marketing booth, the booth identifier can be allocated to each marketing booth, to uniquely indicate the marketing booth. The attribute information of the corresponding marketing booth can be determined based on the booth identifier. The attribute information includes the specified page on which the marketing booth is located, a booth shape, a size, a display location of the marketing booth on the specified page, etc.

[0076] S302: Invoke the target program to determine, based on the booth identifier, the marketing information to be displayed in the marketing booth corresponding to the booth identifier.

[0077] In this specification, the electronic wallet can invoke the target program to directly determine, on a terminal device side (an electronic wallet side) used by the user, the marketing information to be displayed in the marketing booth, or can hand over, by using the target program, determining of the marketing information to a marketing server communicatively connected to a

terminal device. This is not limited in this specification.

[0078] In addition, to improve a possibility that the user interacts with the determined marketing information, a user preference can be analyzed based on a user historical behavior, and personalized marketing information is generated for the user, to attract the user to interact with the marketing information, thereby improving a possibility that the user obtains digital assets and uses the electronic wallet to consume the digital assets to perform an electronic transaction. The user historical behavior can be obtained from the electronic wallet, a serving end corresponding to the marketing server, or one or more ends in third-party serving ends. The user historical behavior can include information such as a browsing record, a search record, an interaction record, and an electronic transaction record of the user. Certainly, attribute information of the user such as an age, a geographical location, and hobbies and interests can be obtained, and the user historical behavior and the attribute information of the user are combined to analyze a preference and a behavior model of the user, to generate the personalized marketing information for the user.

[0079] In addition, The user historical behavior is privacy data of the user. To ensure security of the privacy data, a privacy computing capability such as secure multi-party computation, federal learning, or a trusted execution environment can be used to apply the user historical behavior to the step of determining the marketing information, to obtain marketing information of more interest to the user, thereby improving a possibility that the user interacts with the marketing information and improving a conversion rate.

[0080] In an optional embodiment of this specification, for S302 shown in FIG. 6, the target program can interact with the marketing server, so that the marketing server specifically determines the marketing information. As shown in FIG. 7, a specific interaction procedure is as follows:

[0081] S400: The electronic wallet obtains the user identifier by using the target program, and generates a marketing information obtaining request based on the user identifier and the booth identifier.

[0082] In this specification, the user identifier is information or a string used to uniquely identify the user, and can be a user name used to log in to the electronic wallet, a unique user number allocated by the electronic wallet to the user, a mobile phone number of the user, an account code authenticated by a third party (for example, another social media), etc., or can be an authorization code used to represent that the user authorizes use of information of the user.

[0083] Specifically, obtaining the user identifier by using the target program can be: invoking a specific data obtaining interface by using the target program, and importing a parameter used to obtain the user identifier, to obtain the user identifier.

[0084] An optional example of code for obtaining the user identifier is as follows:

```
5      my.getAuthCode({  
          scopes: 'auth_base',  
          success: res => {  
              }  
          });
```

10 [0085] Herein, "my.getAuthCode" is a specific data obtaining interface, and "auth_base" is a parameter used to obtain the user identifier. The interface is invoked, and a parameter is imported. The user identifier can be obtained after successful execution.

[0086] In addition, in this specification, the user identifier can be obtained in a silent authorization method or an active authorization method, and two user identifier obtaining methods
15 of silent authorization and active authorization can be distinguished by importing different parameters used to obtain the user identifier. For example, "auth_base" indicates that the silent authorization method is used, and "auth_user" indicates that the active authorization method is used.

[0087] In the silent authorization method, an authorization floating window does not pop up
20 in the electronic wallet, and the user identifier can be obtained by invoking a specific data obtaining interface. In the active authorization method, when a specific data obtaining interface is invoked, an authorization floating layer is invoked (for example, a half-screen authorization box is invoked) on a current page of the electronic wallet, and the user identifier is returned through the specific data obtaining interface in response to an operation of confirming authorization by the user. It
25 should be noted that, determining of the marketing information is performed after the electronic wallet responds to the display request for the specified page and before the specified page is displayed. Therefore, the current page that is of the electronic wallet and that displays the authorization floating layer can be a specified page that is not rendered and that does not display any content, or can be another page displayed before the electronic wallet displays the specified
30 page. This is not limited in this specification.

[0088] Then, the marketing information obtaining request is generated based on the obtained

user identifier and the booth identifier corresponding to the marketing booth included on the specified page. The marketing information obtaining request is used to indicate to obtain marketing information to be displayed to the user corresponding to the user identifier in the marketing booth corresponding to the booth identifier.

5 **[0089]** S402: The electronic wallet sends the marketing information obtaining request to the marketing server.

[0090] S404: The marketing server obtains a user historical behavior based on the user identifier, determines attribute information of the marketing booth corresponding to the booth identifier based on the booth identifier, and determines, based on the user historical behavior and
10 the attribute information, the marketing information to be displayed in the marketing booth corresponding to the display identifier.

[0091] In this step, the marketing server can identify, based on the user identifier in the marketing content obtaining request, a specific user to whom the determined marketing information is displayed. Therefore, the user historical behavior of the corresponding user is
15 searched for based on the user identifier. The user historical behavior can be obtained by the marketing server from the electronic wallet, a serving end corresponding to the marketing server, or one or more ends in third-party serving ends, and is used on a marketing server side, to obtain marketing information of more interest to the user.

[0092] The user historical behavior can include information such as a browsing record, a
20 search record, an interaction record, and an electronic transaction record of the user.

[0093] To protect security of privacy data of the user, meet requirements of data security and regulatory compliance, and avoid a loss of the user due to disclosure of the privacy data, in this specification, a privacy computing capability can be used to ensure that user behavior data is not disclosed or used in violation of regulations in transmission, computing, and use processes. For
25 example, a technical route of cryptography of secure multi-party computation is used to ensure that processing such as data transmission and computing is performed for a user historical behavior in an "encrypted state". In a processing process, the user historical behavior is in an encrypted and unexposed state. For another example, a trusted execution environment route is used, and trusted tamper-resistant software and hardware devices are configured in the marketing server, to construct
30 a trusted secure environment in which the user historical behavior is difficult to be eavesdropped by an outside, and ensure that the user historical behavior is processed by the trusted program in

the environment provided by the marketing server. Alternatively, a technical route of information confusion and desensitization can be used, and data processing is performed on the user historical behavior by using information processing means such as noise addition, deletion, and generalization, to reduce or remove sensitive information in the user historical behavior and then perform processing such as transmission, storage, and computing. Certainly, secure transmission and storage of the user historical behavior can alternatively be implemented by using an existing privacy computing solution of any type, to improve security of the privacy data of the user. This is not limited in this specification.

[0094] Then, the attribute information of the corresponding marketing booth is determined based on the booth identifier. The attribute information can include a specified page on which the marketing booth is located, a booth shape, a size, a display location of the marketing booth on the specified page, etc. The attribute information of the marketing booth is introduced into a marketing information determining procedure, so that a form of the determined marketing information can better match a shape and a size of the marketing booth, or content displayed in the marketing information can better match content displayed on the specified page, to further improve the display effect of the marketing information, and attract the user to interact with the marketing information.

[0100] Further, the marketing server determines, based on the user historical behavior and the attribute information, the marketing information to be displayed in the marketing booth corresponding to the display identifier. A used pre-optimized recommendation algorithm can be constructed based on solutions such as a deep learning model, a reinforcement learning model, and user clustering.

[0101] The deep learning model is used as an example. Historical behavior data of each reference user can be collected in advance, to obtain historical marketing information exchanged by each reference user when using the electronic wallet, and attribute information of a marketing booth in which the historical marketing information is located. Model training is performed by using, as a training sample, the historical behavior data of each reference user and attribute information of a marketing booth in which historical marketing information exchanged by each reference user is located, and by using, as a mark of the training sample, the historical marketing information exchanged by each reference user, to obtain a marketing information prediction model. Therefore, marketing information of interest to the user is predicted based on the user historical

behavior and the attribute information of the marketing booth by using the marketing information prediction model whose training is completed.

[0102] User clustering is used as an example. Users can be grouped based on the user historical behavior and a historical behavior of another user and a clustering algorithm, and a user group that has a similar behavior or interest with the user is identified, to determine, based on a preference of a user group similar to the user as the marketing information to be displayed to the user, the marketing information adapted to the marketing booth.

[0103] Certainly, to further improve attractiveness of the marketing information to the user and increase a possibility that the user interacts with the marketing information, information about the specified page such as a date and a time period of the display request for the specified page and a type and a version of a client of the electronic wallet in step S100, and attribute information of the user such as an age, a geographical location, and hobbies and interests can be further introduced, and the user historical behavior, the attribute information of the user, and the information about the specified page are combined to analyze a preference and a behavior pattern of the user, to generate personalized marketing information for the user.

[0104] S406: Return the determined marketing information to the electronic wallet.

[0105] S408: The electronic wallet receives, by using the target program, the marketing information returned by the marketing server.

[0106] Based on the implementation shown in FIG. 7, the marketing server determines the marketing information based on the attribute information of the marketing booth and the user historical behavior. In a high concurrency scenario, the marketing server can relieve pressure of determining and managing the marketing information by using the electronic wallet. In addition, the user historical behavior that can be obtained by the marketing server has a broader dimension and more rich information, and marketing content that can be more personalized and better match a user consumption intention can be provided, to improve a probability that the user taps the marketing information, and improve a probability that the user obtains digital assets and consumes the digital assets to perform an electronic transaction.

[0107] In an optional embodiment of this specification, before the marketing information obtaining request is generated in step S400 shown in FIG. 7, whether the preset marketing information is pre-configured in the electronic wallet can be queried. If yes, the marketing server can directly determine, based on the preset marketing information, the marketing information to

be displayed on the specified page. For a specific implementation, refer to FIG. 8. Steps are as follows.

[0108] S500: The electronic wallet searches, by using the target program, for whether the marketing booth corresponding to the booth identifier corresponds to the preset marketing information. If yes, step S502 is performed; otherwise, step S504 is performed.

[0109] In this specification, the marketing information to be displayed on the specified page can be configured by the electronic wallet in addition to being determined by the marketing server based on the pre-optimized recommendation algorithm in combination with the user historical behavior and the attribute information of the marketing booth as shown in FIG. 7.

[0110] Specifically, displaying the marketing information on the specified page of the electronic wallet based on a specific service scenario aims to improve key indicators such as a click-through rate and a conversion rate of a specific event or theme activity, and marketing information obtained by analyzing the user preference based on the user historical behavior may be unrelated to the specific event or theme activity.

[0111] In this case, before the electronic wallet invokes the target program to generate the marketing information obtaining request, the target program can search, based on the booth identifier, for whether the corresponding marketing booth corresponds to the preset marketing information pre-configured in the electronic wallet, that is, whether marketing information that is of a specific actual event or theme activity and that corresponds to the marketing booth is pre-configured in the electronic wallet. If yes, it indicates whether the electronic wallet requires in advance content and a form of the marketing information to be displayed in the marketing booth. In this case, the target program does not need to be invoked to generate the marketing information obtaining request, and the preset marketing information is directly used as the marketing information to be displayed in the marketing booth. However, if the marketing information is not found, it indicates that the marketing information to be displayed in the marketing booth is not pre-configured in the electronic wallet. In this case, the electronic wallet can still invoke the target program to generate the marketing information obtaining request, to execute the above-mentioned implementation shown in FIG. 7.

[0112] The preset marketing information pre-configured in the electronic wallet and the booth identifier of the marketing booth corresponding to the preset marketing information can be stored in the electronic wallet in advance, or can be stored on a serving end side corresponding to the

electronic wallet. A form of a key-value pair can be used. Storage is performed by using the booth identifier as a key and using the preset marketing information as a value.

[0113] In addition, it should be further noted that, an occasion at which the electronic wallet configures the preset marketing information and the booth identifier corresponding to the preset marketing information is usually before step S500 is performed, specifically, before the electronic wallet responds to the display request for the specified page in step S100. In this way, when performing step S100, the electronic wallet can optionally determine, by using the target program, the booth identifier of the marketing booth included on the specified page, and directly use the booth identifier as an index to search for whether the booth identifier corresponds to the preset marketing information.

[0114] S502: Generate a display message by using the target program based on the preset marketing information, and sending the display message to the marketing server, so that the marketing server stores the preset marketing information carried in the received display message, uses the preset marketing information as the marketing information to be displayed in the marketing booth corresponding to the display identifier, and returns the determined marketing information to the electronic wallet, and the electronic wallet receives, by using the target program, the marketing information returned by the marketing server.

[0115] In this specification, when the marketing booth included on the specified page corresponds to the preset marketing information, although the marketing information to be displayed in the marketing booth is configured in the electronic wallet, to ensure that the marketing information is uniformly managed, reduce pressure of processing and rendering the marketing information by the electronic wallet in a high concurrency scenario, and improve display efficiency of the specified page, the electronic wallet can invoke the target program to generate the display message based on the preset marketing information corresponding to the determined booth identifier, and send the display message to the marketing server, so that the marketing server uniformly manages the marketing information to be displayed in the marketing booth on the specified page.

[0116] Specifically, the marketing server can obtain the preset marketing information through parsing from the display message in response to the received display message, to use the preset marketing information as the marketing information to be displayed in the marketing booth corresponding to the booth identifier, and record and store the preset marketing information. Then,

the determined marketing information is returned to the electronic wallet, and the electronic wallet receives, by using the target program, the marketing information returned by the marketing server, and renders the marketing information in the marketing booth included on the specified page.

[0117] S504: Generate the marketing information obtaining request based on the user
5 identifier and the booth identifier.

[0118] Specifically, when the electronic wallet does not find, by using the target program, the preset marketing information corresponding to the marketing booth corresponding to the booth identifier, the above-mentioned implementation shown in FIG. 7 can be executed by using the target program, and the marketing server determines the marketing information based on the user
10 historical behavior and the attribute information of the marketing booth, and returns the marketing information.

[0119] In one or more embodiments of this specification, step S300 shown in FIG. 6 can be specifically implemented in the following implementations:

[0120] Step 1: Pre-determine all candidate pages used to display the marketing information.

[0121] In actual applications, a proportion of the marketing information on the specified page
15 is too large, or too many specified pages display the marketing information. Consequently, a page loading time may be increased when the electronic wallet is used, normal use and browse experience of the user are interrupted, and negative marketing is caused to user experience. Therefore, in this specification, several pages used to display the marketing information can be
20 selected, as all candidate pages, in advance from all display pages displayed by the electronic wallet to the user. A quantity of candidate pages can be determined with reference to an actual application scenario in which the electronic wallet is located and a user group to which the electronic wallet is oriented. This specification sets no limitation on an actual quantity of candidate pages.

[0122] Optionally, the quantity of candidate pages can be obtained in the following
25 implementations:

[0123] First, a quantity of display pages used to display the marketing information is defined as a to-be-optimized quantity. Key indicators used to evaluate the display effect of the marketing information are defined, and include a click-through rate, a conversion rate, and an average
30 incoming amount.

[0124] Then, the to-be-optimized quantity is initialized to display the marketing information

on an initial to-be-optimized quantity of display pages, the initial to-be-optimized quantity of display pages that display the marketing information are placed to a specified user group for testing, and behavior data of the user for the marketing information is obtained, including a quantity of taps, a residence time, a quantity of converted transactions, and a transaction amount.

5 **[0125]** Then, a key indicator of a display effect corresponding to the initial to-be-optimized quantity of display pages is determined based on the obtained behavior data of the user for the marketing information, and the initial to-be-optimized quantity is adjusted based on an optimization objective of maximizing the key indicator, to obtain a current to-be-optimized quantity, and the above-mentioned step is repeatedly performed, until a quantity of optimization
10 times exceeds a preset quantity threshold or the key indicator converges, to obtain an optimized quantity, which is used as a quantity of candidate pages used to display the marketing information.

[0126] Step 2: Determine all marketing booths included on all the candidate pages.

[0127] For each candidate page, one or more marketing booths included on the candidate page are determined. Quantities of marketing booths separately included on different candidate pages
15 can be the same or different. This specification sets no specific limitation on a quantity of marketing booths included on one candidate page.

[0128] Specifically, a size and dimension of the marketing booth and a display location on the candidate page can be planned based on information about the candidate page such as a dimension and size of the candidate page and a display form of native content, and an interaction preference
20 of the user for the candidate page, so that the marketing information displayed in the marketing booth can be deployed at a location at which the user easily notices and performs interaction and that is on the candidate page as much as possible in a manner in which main content is not invaded or obscured, thereby improving a probability that the user interacts with the marketing information displayed in the marketing booth, to improve a possibility and a quantity of electronic transactions
25 performed by the user by using the electronic wallet.

[0129] Step 3: Determine, based on all the candidate pages and all the marketing booths, all candidate booth identifiers corresponding to all the marketing booths included on all the candidate pages.

[0130] Then, for each candidate page, a candidate booth identifier corresponding to each
30 marketing booth included on the candidate page is determined. Usually, one marketing booth corresponds to one candidate booth identifier. In practice, a correspondence among a candidate

booth identifier, a marketing booth, and a candidate page (a corresponding page identifier) to which the marketing booth belongs can be established. The candidate booth identifier can be used to locate a specific candidate page on which a corresponding marketing booth is located, or can be used to determine attribute information of the corresponding marketing booth.

5 **[0131]** Step 4: In response to the display request for the specified page, determine whether the specified page belongs to all the candidate pages; and if yes, determine, from all the candidate booth identifiers, the booth identifier corresponding to the marketing booth included on the specified page.

10 **[0132]** Therefore, when the electronic wallet responds to the display request for the specified page, whether the specified page is one of the candidate pages can be first determined. If yes, it indicates that a marketing booth is reserved on the specified page, and the specified page is a page used to display the marketing information. If the specified page is not any one of the candidate pages, it indicates that the marketing booth is not reserved on the specified page, and the specified page is not a page used to display the marketing information.

15 **[0133]** In one or more embodiments of this specification, in the implementations shown in FIG. 5, FIG. 6, FIG. 7, and FIG. 8 provided in this specification, the electronic wallet invokes the target program to interact with the marketing server, to send or receive information, to determine marketing information or determine the digital asset allocation amount. To improve security of a case in which the electronic wallet invokes the target program to interact with the marketing server,

20 to send or receive information, and ensure that privacy data is not disclosed, before interaction is performed, the electronic wallet can invoke the target program to obtain the user identifier of the user, and establish, based on the obtained user identifier, a trusted session between the electronic wallet and the marketing server that is dedicated to transmitting information related to the user corresponding to the user identifier (the marketing information displayed to the user, or the digital

25 asset allocation amount allocated to the account of the user). Therefore, the electronic wallet can invoke the target program to send information to the marketing server through the established trusted session, and receive information from the marketing server, to implement secure information exchange between the electronic wallet and the marketing server, thereby ensuring that privacy data of the user is not disclosed.

30 **[0134]** The specification also provides a computer-readable non-transitory storage medium, where the storage medium stores a computer program, which, when executed by a processor, can

be used to perform one or more steps of one or more methods described or illustrated herein or provides functionality described or illustrated herein. Herein, the computer-readable non-transitory storage medium or media may include one or more semiconductor-based or other integrated circuits (ICs) (such, as for example, field-programmable gate arrays (FPGAs) or application-specific ICs (ASICs)), hard disk drives (HDDs), hybrid hard drives (HHDs), optical discs, optical disc drives (ODDs), magneto-optical discs, magneto-optical drives, floppy diskettes, floppy disk drives (FDDs), magnetic tapes, solid-state drives (SSDs), RAM-drives, SECURE DIGITAL cards or drives, any other suitable computer-readable non-transitory storage media, or any suitable combination of two or more of these, where appropriate. A computer-readable non-transitory storage medium may be volatile, non-volatile, or a combination of volatile and non-volatile, where appropriate.

[0135] The specification also provides a computer system. FIG. 9 illustrates an example computer system 900. In particular embodiments, one or more computer systems 900 perform one or more steps of one or more methods described or illustrated herein. In particular embodiments, one or more computer systems 900 provide functionality described or illustrated herein. In particular embodiments, software running on one or more computer systems 900 performs one or more steps of one or more methods described or illustrated herein or provides functionality described or illustrated herein. Particular embodiments include one or more portions of one or more computer systems 900. Herein, reference to a computer system may encompass a computing device, and vice versa, where appropriate. Moreover, reference to a computer system may encompass one or more computer systems, where appropriate.

[0136] This disclosure contemplates any suitable number of computer systems 900. This disclosure contemplates computer system 900 taking any suitable physical form. As example and not by way of limitation, computer system 900 may be an embedded computer system, a system-on-chip (SOC), a single-board computer system (SBC) (such as, for example, a computer-on-module (COM) or system-on-module (SOM)), a desktop computer system, a laptop or notebook computer system, an interactive kiosk, a mainframe, a mesh of computer systems, a mobile telephone, a personal digital assistant (PDA), a server, a tablet computer system, or a combination of two or more of these. Where appropriate, computer system 900 may include one or more computer systems 900; be unitary or distributed; span multiple locations; span multiple machines; span multiple data centers; or reside in a cloud, which may include one or more cloud components

in one or more networks. Where appropriate, one or more computer systems 900 may perform without substantial spatial or temporal limitation one or more steps of one or more methods described or illustrated herein. As an example and not by way of limitation, one or more computer systems 900 may perform in real time or in batch mode one or more steps of one or more methods described or illustrated herein. One or more computer systems 900 may perform at different times or at different locations one or more steps of one or more methods described or illustrated herein, where appropriate.

[0137] In particular embodiments, computer system 900 includes a processor 902, memory 904, storage 906, an input/output (I/O) interface 908, a communication interface 910, and a bus 912. Although this disclosure describes and illustrates a particular computer system having a particular number of particular components in a particular arrangement, this disclosure contemplates any suitable computer system having any suitable number of any suitable components in any suitable arrangement.

[0138] In particular embodiments, processor 902 includes hardware for executing instructions, such as those making up a computer program. As an example and not by way of limitation, to execute instructions, processor 902 may retrieve (or fetch) the instructions from an internal register, an internal cache, memory 904, or storage 906; decode and execute them; and then write one or more results to an internal register, an internal cache, memory 904, or storage 906. In particular embodiments, processor 902 may include one or more internal caches for data, instructions, or addresses. This disclosure contemplates processor 902 including any suitable number of any suitable internal caches, where appropriate. As an example and not by way of limitation, processor 902 may include one or more instruction caches, one or more data caches, and one or more translation lookaside buffers (TLBs). Instructions in the instruction caches may be copies of instructions in memory 904 or storage 906, and the instruction caches may speed up retrieval of those instructions by processor 902. Data in the data caches may be copies of data in memory 904 or storage 906 for instructions executing at processor 902 to operate on; the results of previous instructions executed at processor 902 for access by subsequent instructions executing at processor 902 or for writing to memory 904 or storage 906; or other suitable data. The data caches may speed up read or write operations by processor 902. The TLBs may speed up virtual-address translation for processor 902. In particular embodiments, processor 902 may include one or more internal registers for data, instructions, or addresses. This disclosure contemplates processor 902 including

any suitable number of any suitable internal registers, where appropriate. Where appropriate, processor 902 may include one or more arithmetic logic units (ALUs); be a multi-core processor; or include one or more processors 902. Although this disclosure describes and illustrates a particular processor, this disclosure contemplates any suitable processor.

5 **[0139]** In particular embodiments, memory 904 includes main memory for storing instructions for processor 902 to execute or data for processor 902 to operate on. As an example and not by way of limitation, computer system 900 may load instructions from storage 906 or another source (such as, for example, another computer system 900) to memory 904. Processor 902 may then load the instructions from memory 904 to an internal register or internal cache. To execute the
10 instructions, processor 902 may retrieve the instructions from the internal register or internal cache and decode them. During or after execution of the instructions, processor 902 may write one or more results (which may be intermediate or final results) to the internal register or internal cache. Processor 902 may then write one or more of those results to memory 904. In particular embodiments, processor 902 executes only instructions in one or more internal registers or internal
15 caches or in memory 904 (as opposed to storage 906 or elsewhere) and operates only on data in one or more internal registers or internal caches or in memory 904 (as opposed to storage 906 or elsewhere). One or more memory buses (which may each include an address bus and a data bus) may couple processor 902 to memory 904. Bus 912 may include one or more memory buses, as described below. In particular embodiments, one or more memory management units (MMUs)
20 reside between processor 902 and memory 904 and facilitate accesses to memory 904 requested by processor 902. In particular embodiments, memory 904 includes random access memory (RAM). This RAM may be volatile memory, where appropriate. Where appropriate, this RAM may be dynamic RAM (DRAM) or static RAM (SRAM). Moreover, where appropriate, this RAM may be single-ported or multi-ported RAM. This disclosure contemplates any suitable RAM.
25 Memory 904 may include one or more memories 904, where appropriate. Although this disclosure describes and illustrates particular memory, this disclosure contemplates any suitable memory.

[0140] In particular embodiments, storage 906 includes mass storage for data or instructions. As an example and not by way of limitation, storage 906 may include a hard disk drive (HDD), a floppy disk drive, flash memory, an optical disc, a magneto-optical disc, magnetic tape, or a
30 Universal Serial Bus (USB) drive or a combination of two or more of these. Storage 906 may include removable or non-removable (or fixed) media, where appropriate. Storage 906 may be

internal or external to computer system 900, where appropriate. In particular embodiments, storage 906 is non-volatile, solid-state memory. In particular embodiments, storage 906 includes read-only memory (ROM). Where appropriate, this ROM may be mask-programmed ROM, programmable ROM (PROM), erasable PROM (EPROM), electrically erasable PROM (EEPROM), electrically alterable ROM (EAROM), or flash memory or a combination of two or more of these. This disclosure contemplates mass storage 906 taking any suitable physical form. Storage 906 may include one or more storage control units facilitating communication between processor 902 and storage 906, where appropriate. Where appropriate, storage 906 may include one or more storages 906. Although this disclosure describes and illustrates particular storage, this disclosure contemplates any suitable storage.

[0141] In particular embodiments, I/O interface 908 includes hardware, software, or both, providing one or more interfaces for communication between computer system 900 and one or more I/O devices. Computer system 900 may include one or more of these I/O devices, where appropriate. One or more of these I/O devices may enable communication between a person and computer system 900. As an example and not by way of limitation, an I/O device may include a keyboard, keypad, microphone, monitor, mouse, printer, scanner, speaker, still camera, stylus, tablet, touch screen, trackball, video camera, another suitable I/O device or a combination of two or more of these. An I/O device may include one or more sensors. This disclosure contemplates any suitable I/O devices and any suitable I/O interfaces 908 for them. Where appropriate, I/O interface 908 may include one or more device or software drivers enabling processor 902 to drive one or more of these I/O devices. I/O interface 908 may include one or more I/O interfaces 908, where appropriate. Although this disclosure describes and illustrates a particular I/O interface, this disclosure contemplates any suitable I/O interface.

[0142] In particular embodiments, communication interface 910 includes hardware, software, or both providing one or more interfaces for communication (such as, for example, packet-based communication) between computer system 900 and one or more other computer systems 900 or one or more networks. As an example and not by way of limitation, communication interface 910 may include a network interface controller (NIC) or network adapter for communicating with an Ethernet or other wire-based network or a wireless NIC (WNIC) or wireless adapter for communicating with a wireless network, such as a WI-FI network. This disclosure contemplates any suitable network and any suitable communication interface 910 for it. As an example and not

by way of limitation, computer system 900 may communicate with an ad hoc network, a personal area network (PAN), a local area network (LAN), a wide area network (WAN), a metropolitan area network (MAN), or one or more portions of the Internet or a combination of two or more of these. One or more portions of one or more of these networks may be wired or wireless. As an example, 5 computer system 900 may communicate with a wireless PAN (WPAN) (such as, for example, a BLUETOOTH WPAN), a WI-FI network, a WI-MAX network, a cellular telephone network (such as, for example, a Global System for Mobile Communications (GSM) network), or other suitable wireless network or a combination of two or more of these. Computer system 900 may include any suitable communication interface 910 for any of these networks, where appropriate. 10 Communication interface 910 may include one or more communication interfaces 910, where appropriate. Although this disclosure describes and illustrates a particular communication interface, this disclosure contemplates any suitable communication interface.

[0143] In particular embodiments, bus 912 includes hardware, software, or both coupling components of computer system 900 to each other. As an example and not by way of limitation, 15 bus 912 may include an Accelerated Graphics Port (AGP) or other graphics bus, an Enhanced Industry Standard Architecture (EISA) bus, a front-side bus (FSB), a HYPERTRANSPORT (HT) interconnect, an Industry Standard Architecture (ISA) bus, an INFINIBAND interconnect, a low-pin-count (LPC) bus, a memory bus, a Micro Channel Architecture (MCA) bus, a Peripheral Component Interconnect (PCI) bus, a PCI-Express (PCIe) bus, a serial advanced technology 20 attachment (SATA) bus, a Video Electronics Standards Association local (VLB) bus, or another suitable bus or a combination of two or more of these. Bus 912 may include one or more buses 912, where appropriate. Although this disclosure describes and illustrates a particular bus, this disclosure contemplates any suitable bus or interconnect.

[0144] The embodiments of this specification are described in a progressive way. For same or 25 similar parts in the embodiments, references can be made to each other. Each embodiment focuses on a difference from another embodiment. Particularly, some system embodiments are briefly described because they are basically similar to some method embodiments. For related parts, references can be made to related descriptions in some method embodiments.

[0145] The foregoing descriptions are merely embodiments of this specification, and are not 30 intended to limit this specification. A person skilled in the art can make various changes and changes to this specification. Any modification, equivalent replacement, improvement, etc. made

without departing from the spirit and principle of this specification shall fall within the scope of the claims in this specification.

CLAIMS

What is claimed is:

1. A service execution method, wherein the method is applied to an electronic wallet, and a target program is pre-deployed in the electronic wallet; and the method comprises:

5 determining marketing information by using the target program in response to a display request for a specified page;

 displaying the specified page, and displaying the marketing information in a marketing booth comprised on the specified page; and

 allocating digital assets corresponding to the marketing information to an account of a user
10 in the electronic wallet in response to an operation performed by the user on the marketing information.

2. The method according to claim 1, wherein the allocating digital assets corresponding to the marketing information to an account of a user in the electronic wallet in response to an operation performed by the user on the marketing information specifically comprises:

15 generating an activity participation request for a marketing activity comprising the marketing information by using the target program and based on the marketing information and a user identifier of the user in response to the operation performed by the user on the marketing information;

 sending the activity participation request to a marketing server, so that the marketing server
20 determines a digital asset allocation amount corresponding to the marketing activity comprising the marketing information in response to the activity participation request, generates an allocation instruction based on the digital asset allocation amount corresponding to the marketing activity comprising the marketing information and the user identifier, and returns the allocation instruction to the electronic wallet; and

25 allocating digital assets corresponding to the digital asset allocation amount to the account of the user corresponding to the user identifier in the electronic wallet in response to the allocation instruction returned by the marketing server.

3. The method according to claim 1, wherein the determining marketing information by using the target program in response to a display request for a specified page specifically comprises:

30 determining a booth identifier corresponding to the marketing booth comprised on the

specified page in response to the display request for the specified page; and

invoking the target program to determine, based on the booth identifier, the marketing information to be displayed in the marketing booth corresponding to the booth identifier.

4. The method according to claim 3, wherein the invoking the target program to determine,
5 based on the booth identifier, the marketing information to be displayed in the marketing booth corresponding to the booth identifier specifically comprises:

obtaining a user identifier by using the target program, and generating a marketing information obtaining request based on the user identifier and the booth identifier;

10 sending the marketing information obtaining request to a marketing server, so that the marketing server obtains a user historical behavior based on the user identifier, determines attribute information of the marketing booth corresponding to the booth identifier based on the booth identifier, determines, based on the user historical behavior and the attribute information, the marketing information to be displayed in the marketing booth corresponding to the display identifier, and returns the determined marketing information to the electronic wallet; and

15 receiving, by using the target program, the marketing information returned by the marketing server.

5. The method according to claim 4, wherein before the generating a marketing information obtaining request based on the user identifier and the booth identifier, the method further comprises:

20 searching, by using the target program, for whether the marketing booth corresponding to the booth identifier corresponds to preset marketing information; and

if yes, generating a display message by using the target program based on the preset marketing information, and sending the display message to the marketing server, so that the marketing server stores the preset marketing information carried in the received display message, uses the preset marketing information as the marketing information to be displayed in the marketing booth
25 corresponding to the display identifier, and returns the determined marketing information to the electronic wallet, and the electronic wallet receives, by using the target program, the marketing information returned by the marketing server; or

if not, generating the marketing information obtaining request based on the user identifier and the booth identifier.

30 6. The method according to claim 3, wherein the determining a booth identifier corresponding to the marketing booth comprised on the specified page in response to the display request for the

specified page specifically comprises:

pre-determining all candidate pages used to display the marketing information;

determining all marketing booths comprised on all the candidate pages;

determining, based on all the candidate pages and all the marketing booths, all candidate

5 booth identifiers corresponding to all the marketing booths comprised on all the candidate pages;
and

in response to the display request for the specified page, determining whether the specified
page belongs to all the candidate pages; and if yes, determining, from all the candidate booth
identifiers, the booth identifier corresponding to the marketing booth comprised on the specified
10 page.

7. A computer system, comprising a storage, a processor, and a computer program that is
stored in the storage and that is capable of running on the processor, wherein when executing the
program, the processor implements the following steps:

determining, in response to a display request for a specified page, marketing information by
15 using a target program pre-deployed in an electronic wallet;

displaying the specified page, and displaying the marketing information in a marketing booth
comprised on the specified page; and

allocating digital assets corresponding to the marketing information to an account of a user
in the electronic wallet in response to an operation performed by the user on the marketing
20 information.

8. The computer system according to claim 7, wherein the allocating digital assets
corresponding to the marketing information to an account of a user in the electronic wallet in
response to an operation performed by the user on the marketing information specifically
comprises:

25 generating an activity participation request for a marketing activity comprising the marketing
information by using the target program and based on the marketing information and a user
identifier of the user in response to the operation performed by the user on the marketing
information;

sending the activity participation request to a marketing server, so that the marketing server
30 determines a digital asset allocation amount corresponding to the marketing activity comprising
the marketing information in response to the activity participation request, generates an allocation

instruction based on the digital asset allocation amount corresponding to the marketing activity comprising the marketing information and the user identifier, and returns the allocation instruction to the electronic wallet; and

allocating digital assets corresponding to the digital asset allocation amount to the account of the user corresponding to the user identifier in the electronic wallet in response to the allocation instruction returned by the marketing server.

9. The computer system according to claim 7, wherein the determining marketing information by using the target program in response to a display request for a specified page specifically comprises:

determining a booth identifier corresponding to the marketing booth comprised on the specified page in response to the display request for the specified page; and

invoking the target program to determine, based on the booth identifier, the marketing information to be displayed in the marketing booth corresponding to the booth identifier.

10. The computer system according to claim 9, wherein the invoking the target program to determine, based on the booth identifier, the marketing information to be displayed in the marketing booth corresponding to the booth identifier specifically comprises:

obtaining a user identifier by using the target program, and generating a marketing information obtaining request based on the user identifier and the booth identifier;

sending the marketing information obtaining request to a marketing server, so that the marketing server obtains a user historical behavior based on the user identifier, determines attribute information of the marketing booth corresponding to the booth identifier based on the booth identifier, determines, based on the user historical behavior and the attribute information, the marketing information to be displayed in the marketing booth corresponding to the display identifier, and returns the determined marketing information to the electronic wallet; and

receiving, by using the target program, the marketing information returned by the marketing server.

11. The computer system according to claim 10, wherein before the generating a marketing information obtaining request based on the user identifier and the booth identifier, the processor further implements the following steps:

searching, by using the target program, for whether the marketing booth corresponding to the booth identifier corresponds to preset marketing information; and

if yes, generating a display message by using the target program based on the preset marketing information, and sending the display message to the marketing server, so that the marketing server stores the preset marketing information carried in the received display message, uses the preset marketing information as the marketing information to be displayed in the marketing booth
5 corresponding to the display identifier, and returns the determined marketing information to the electronic wallet, and the electronic wallet receives, by using the target program, the marketing information returned by the marketing server; or

if not, generating the marketing information obtaining request based on the user identifier and the booth identifier.

10 12. The computer system according to claim 9, wherein the determining a booth identifier corresponding to the marketing booth comprised on the specified page in response to the display request for the specified page specifically comprises:

pre-determining all candidate pages used to display the marketing information;

determining all marketing booths comprised on all the candidate pages;

15 determining, based on all the candidate pages and all the marketing booths, all candidate booth identifiers corresponding to all the marketing booths comprised on all the candidate pages; and

in response to the display request for the specified page, determining whether the specified page belongs to all the candidate pages; and if yes, determining, from all the candidate booth
20 identifiers, the booth identifier corresponding to the marketing booth comprised on the specified page.

13. A computer-readable non-volatile storage medium, wherein the storage medium stores a computer program, and when the computer program is executed by a processor, the method according to any one of claims 1 to 6 is implemented.

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